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ARTICLE I. *Observations on Remittent Fever, founded upon Cases observed in the Pennsylvania Hospital.* By THOMAS STEWARDSON, M. D., one of the Physicians to the Institution.

THE remittent is by far the most common form of fever, the intermittent excepted, which is met with in the middle and southern sections of the United States. It is described in every elementary treatise on the diseases of our country, and yet it is surprising how few particular histories of it we possess, affording a connected and detailed account of the results of personal observation. To Europe, also, in the southern portion of which, especially the south of France and Italy, this disease prevails to a considerable extent, the same observation is in some degree applicable, for there also the treatises on remittent are few and imperfect, when compared with the numerous and elaborate histories of the several forms and appearances of continued fever.

By most physicians, we believe, that remittent is regarded as much more nearly allied to intermittent than to continued fever. By some, indeed, the two first, viz., intermittent and remittent, are considered as essentially the same disease, which in all its forms is entirely distinct from proper continued fevers. It has also been supposed that remittents were mere modifications sometimes of continued, and at others of intermittent fever; and again, it has been assumed that most, if not all of these fevers, are identical in nature, and vary only in form and type, owing to certain accidental circumstances of season, climate, temperature, &c. One eminent writer, M.

Bouillaud, has denied the very existence of remittent fever, which he most unceremoniously styles a real nosological superfætation (*véritable superfætation nosologique*.) The principal if not the only ground upon which this declaration is founded, is, that M. B. had never met in the hospitals with a disease to which the distinctive title of remittent was properly applicable. No weight, however, can of course be attached to such an argument, when it is known that this form of fever, so common in certain countries, and described as remittent, bilious, &c., is rarely if ever seen in Paris. Indeed, whoever reads with attention the works of Lind, Johnson, and others, cannot fail to recognise in their descriptions a disease presenting features very different from those which belong to proper continued fever, at least those species of it to which the terms typhus and typhoid have been respectively applied. To avoid confusion, I will here observe, that, in accordance with the views of several recent writers, I restrict the term typhus to that species of continued fever which has been at various times described under the name of jail or hospital fever, petechial typhus, &c., and in which the glands of Peyer retain their healthy condition; whilst, by typhoid fever, I understand the disease described under that name by Louis and Chomel, the especial anatomical character of which consists in a peculiar alteration of the glands above mentioned. The latter is identical with the common continued fever of this portion of the United States, and, according to the account of Professor Jackson, of Boston, it would appear to be the prevailing form of fever in the neighborhood of that city, and perhaps also in the eastern states generally.

By remittent fever is understood a disease in which there are distinct paroxysms of fever, alternating with remissions, the paroxysms for the most part coming on regularly every day, though generally, perhaps, more severe at the tertian period. In some cases the remissions are so perfect as to amount almost to intermissions, whilst in others they are very indistinct, and hence it is perfectly true that as to mere type, the disease sometimes approaches to the intermittent, and sometimes to the continued. But however indistinct the remissions, or whatever may be the form which the disease assumes, and few are subject to such variation from season, climate, &c., I believe that it will always be found to possess certain characteristics, which mark it out as essentially distinct from typhoid and other continued fevers. The difference, then, and I think the reader will find much in what follows to sustain the opinion, is not one of mere type, but of essential nature, and the term remittent is no farther applicable to the disease before us, than as it expresses a feature generally observable throughout the whole or the greater part of its course, but still in some cases so slightly marked as to be with difficulty distinguishable, except, perhaps, for a short period at the commencement, or at the approach of convalescence, from the ordinary diurnal remissions of most fevers. The above view is the one which is perhaps now most generally adopted, but to establish on more satisfactory

grounds the analogies and discrepencies observable between remittent and other idiopathic fevers, as well as to elucidate a variety of questions connected with it, detailed histories of the disease as it occurs in different places especially the different sections of our own country, accompanied with a full description of the post mortem appearances, are still wanting. Modern discoveries in reference to the morbid changes observable after death in fevers, as well as the more accurate appreciation of symptoms with reference to these and to diagnosis, render it much easier than formerly to draw the line of distinction between the different species of fevers, as the number of points of comparison is greatly increased.

In the following pages I shall give an account of the cases of remitting fever which occurred in the Pennsylvania hospital during my term of duty in the year 1838, as well as of the fatal cases which occurred during the two following years. In the season of 1838, which was the first of my attendance in the institution as prescribing physician, I kept notes of every case of the disease which was admitted, but from various circumstances, the details which they contain are much less numerous than I could have desired. These notes were for the most part taken by myself, but for an account of the state of the patients at hours when I could not conveniently visit the wards, I am indebted to the kindness of Drs. Smith and Meigs, the resident physicians. Regular notes of all the cases were not kept during the two following years, but I have added to the series the fatal cases which occurred during these years, in order to render the account of the post mortem appearances as complete as possible. For much assistance in drawing up the notes of the cases which occurred during the past season, I am indebted to Dr. Stillé, at that time resident physician. In the analysis of the cases before me, I shall adopt the numerical method, not because I think that "numbers are the only true demonstrable root of human knowledge," but that we may frequently, by their means, in the analysis of the phenomena of disease, arrive at positive and highly important data, scarcely attainable in any other way. That this method has been already abused, and carried into a most wearisome and unprofitable detail, may perhaps be true, but we must not on this account disclaim its proper and legitimate use. By some it is confounded with the calculation of probabilities, to which it has not, in many respects, the most remote affinity. The object of its employment is simply to arrive at more varied and precise data than are otherwise attainable, and thus to lay a broader and more secure foundation on which to rest our conclusions.

The whole number of cases of remittent fever admitted into the medical wards of the Pennsylvania Hospital, exclusive of a small ward for negroes, from the 1st of July to the 1st of October, A. D. 1838, was 20. The whole number of patients admitted during the same period was 109, three of whom only were affected with typhoid fever. The remainder laboured under acute dysenteries, intermittent fevers, and various chronic diseases. In the above

20 cases I do not include that of an individual who entered the 25th of August, and stated that he had been sick for 18 weeks, his disease having commenced whilst he was on the Susquehanna, by chills which came on every other day. Soon after his admission he became comatose, his skin was jaundiced, pulse frequent, and skin warm, stomach irritable, and a peculiar unpleasant sour odour from the body. He died on the 28th, about 64 hours after admission, and, upon examination, the principal lesions observed were a yellow colour of the membranes of the brain, which extended even to its substance, the cut surface of which presented light yellowish red points, instead of the ordinary red dots; the heart was considerably enlarged, and the valves thickened; the liver smaller than natural, especially in the left lobe, its structure perfectly cirrhotic, the granulations varying in size from a large pin's head to that of a very small pea, and of a pale yellow; one kidney (the other not examined) of double its natural size, the increase owing partly to great distension of the calyces, and partly to hypertrophy of the cortical substance; the stomach and upper portion of the alimentary canal presenting some marks of inflammation. The history of the above case in my possession is very imperfect, but enough has been stated, I think, to render it quite probable that it should be regarded as one, not of remittent, but of long continued intermittent, complicated with enlargement of the heart, cirrhosis of the liver, and chronic disease of the kidney, to the latter of which, perhaps, the fatal termination by coma may in great measure be referred. From the above series of 20 cases are also excluded a few which terminated favourably during the same period, of which either the notes are exceedingly incomplete, or the diagnosis doubtful.

Of the 20 cases, 1 only was a female; but no inference can hence be drawn as regards the comparative liability of the two sexes to be attacked by the disease, as the women's ward contains much the smaller number of patients; and those who are likely to become its inmates are generally much less exposed to the causes of the disease than the occupants of the men's ward.

The 19 men were all either sailors engaged in the coasting trade or labourers employed upon the public works in Pennsylvania, and principally on the canal near Columbia. Not one had been a permanent resident of Philadelphia for even a few months previous to admission. Of the 14 sailors, 10 were attacked on board ship, or immediately upon their arrival; 3 within a few days afterwards, at the most ten days or two weeks, and 1 was sick when he went on board. Of the remaining 5, 4 were Irish labourers and 1 was a schoolmaster, all of whom, except one, where this circumstance is not noted, were attacked whilst residing in the neighbourhood of Columbia, on the Susquehanna, where the disease was very prevalent. The female patient above-mentioned was a domestic, who contracted the disease on the Schuylkill, a few miles above the city. We here, at the outset, observe a remarkable difference between this disease and typhoid fever, the latter being peculiarly apt to occur in large cities. Unquestionably,

typhoid fever occasionally attacks persons on ship-board, but then it is to be recollected that in the instances abovementioned the passages of the vessels were commonly very short, sometimes not over a few days, and that the remitting fever generally prevails more or less in the summer and fall, in the neighbourhood of the ports whence they sailed. These ports were all south of Philadelphia, viz. Smyrna, Georgetown, Norfolk, Charleston, Savannah, and Mobile. Not one patient with remitting fever was admitted from on board a vessel trading with any of the more northern ports, or from any more distant place; so that it admits of no reasonable doubt that the patients in question contracted the disease in the vicinity of the ports from whence they had just previously sailed, and where the usually admitted causes of marsh malaria are, I believe, exceedingly rife. The circumstances under which those employed in digging the canal near Columbia were placed, were such as to leave but little doubt of the influence of such malaria upon them.

During the whole summer the weather was exceedingly hot and dry, more uniformly so, indeed, than had been known for a great number of years.

The whole of the admissions took place between the 15th of August and the 17th of October, or during the space of about two months. During the other part of my term, also about two months, not a single case was admitted, except perhaps one which was considered as quotidian intermittent. After the expiration of my term to the end of the year, only one or two more cases were admitted. In fact it is uniformly true that the admissions for remittent fever into the Pennsylvania Hospital are almost exclusively confined to the months of August, September, and October, of each year. Typhoid fever, on the contrary, is much more equally distributed throughout the different seasons of the year, and, according to some, is more frequent between October and April than between April and October.

Of the influence of occasional causes in the development of the disease, I can say but little. In the case of one or two sailors, it followed a severe exposure to cold and wet, and the labourers from Columbia must necessarily have been exposed to a burning sun during the day, alternately with the damp and chilly air of the early morning and evening, whilst at the same time they were unaccustomed to the climate.

The average age of the 20 cases in question was a fraction under 25 years, the youngest being 16 and the oldest 44. There were 6 between 16 and 20, 10 between 20 and 30 inclusive, and 4 over 30 years of age. It does not, however, necessarily follow, that because for the larger proportion of cases are found to occur between the ages of 16 and 30, that there is any peculiar predisposition at that period of life to contract the disease, although that may be very probable, since the great majority of those exposed to its causes and likely to become patients in the hospital are of the age mentioned.

The constitution of the patients appeared to be generally good, and one only is noted as being the subject of any chronic disorder.

Before proceeding farther, I will observe that the disease presented itself under three very different forms, that of common remittent, pernicious remittent, and a high grade of bilious remittent, approaching in several respects to yellow fever. Of the first there were 15 cases, of the second 4 cases, and of the third only 1. I shall not stop to notice the distinctive features of these forms, but proceed at once to lay before the reader the histories of the two fatal cases, in which post-mortem examinations were obtained, and then give a general description of the organs as presented in these, and the 5 fatal cases which occurred subsequently, comparing the anatomical descriptions with those of some other fevers. I shall afterwards study in the same manner the symptoms, &c., of all the cases, and consider some questions, which the facts before me may serve to elucidate.

CASE I.—Benjamin Southwick, a sailor, aged 29, arrived at Philadelphia on the last of August, 1838, four days from Savannah, Georgia. Three days before his arrival he had been exposed in a heavy gale accompanied with much rain, and his clothes wet through. He was taken on the evening of the 31st of August, having previously felt heavy in his head, with a chill, accompanied by pain in the head and back. The chill was slight, did not last long, and during the night he perspired a good deal. On the following day, towards evening, he felt somewhat relieved, but the next day, September 2d, he had a severe chill, followed by high fever, great heat and thirst. On the 3d he was admitted into the Hospital. At that time his skin was hot and dry; pulse frequent, tense and full; headache, stupor, and injection of eye; great tenderness at epigastrium; bowels had been frequently opened. He took the effervescing draught, cold was applied to the head and six cups to the back of neck. Low diet.

September 4th.—Slept well last night; mind clear, no dulness; senses perfect; no noise in ears; no headache; some yellowness and injection of conjunctiva; a little moisture about forehead; skin warm and slightly yellow; pulse 72, moderately full and strong; no cough; tongue red, moist at edges, dryish in centre, with a whitish fur posteriorly; no appetite; vomiting of a greenish fluid; oppression and some pain across hypochondria, which are tender on pressure; belly generally supple, no meteorism; bowels open twice this morning. R.—Cups to epigastrium; cold barley water for drink.

Evening.—High fever; skin hot and dry; tongue dry; frequent vomiting; no stupor or delirium. He was directed to take iced drinks and the effervescing draught; and to have a mustard poultice applied to the stomach; also calomel, gr. $\frac{1}{4}$; opii gr. $\frac{1}{2}$, every two hours.

5th.—Has taken four of the pills of calomel and opium. Head hot; some stupor; no delirium or headache; eyes injected; hearing good; respiration

frequent and laboured; percussion of chest and respiratory murmur natural; tongue dry and hard; irritability of stomach diminished; no vomiting to-day; little or no tenderness at epigastrium; abdomen distended, tympanitic; bowels opened slightly once this morning; skin warm and slightly moist; yellowness very marked, and of a deep shade; pulse full, moderately strong and a little jerking. The cold drinks and the cold to head were continued, and the following powder directed, viz.: calomel and jalap, āā. gr. x; cups to head if cephalic symptoms are not relieved.

Evening.—Stupor continues; some incoherence; great tenderness at epigastrium; does not complain of sensation of heat there; tongue dry, chapped and smooth; pulse more full. Head to be shaved and cold applied; cold drinks as before; also a tablespoonful every hour of the following mixture, viz.: citrate of potash, ʒiij, sulphate of magnesia, ʒv, water, &c., ʒviiij.

6th.—Dozed during night but had no sound sleep; did not talk in his sleep; slight wandering but no positive delirium; answers questions readily and without hesitation; no headache; no noise in ears; senses perfect; pupils small, conjunctiva very yellow; slight bleeding at nose; respiration scarcely 20 in the minute, full; oppression at præcordium; great tenderness at epigastrium, which is distended and resonant from gas; has thrown up his medicine several times; the matter last vomited of a light green color; bowels opened once by injection; stool yellowish brown; skin supple, of natural temperature, of a decided yellow colour; pulse 84, less full and strong; patient lies on his back, quiet. Continue cold drinks and repeat mustard plaster to legs; a blister to the epigastrium. Discontinue the mixture of citrate of potash, and take blue mass, gr. iij; Rhei. gr. vi, one every four hours.

Evening.—The blister has drawn; oppression at præcordium increased; respiration laboured; abdomen distended, tympanitic; mind depressed, slightly wandering; hearing good. The cold drinks were continued and an ounce of tinct. of assafœtida directed by injection.

7th.—Eyes very yellow and pupils contracted; oppression at præcordium continues; vomiting of a light greenish fluid; skin warm, deep yellow; pulse 100 to 106, more corded and less full; has taken but two of the pills ordered yesterday, as they irritated the stomach. Discontinue pills and repeat assafœtida injection and cold drinks.

8th.—Much the same; great dejection of mind with slight stupor, but no delirium; hearing good; no subsultus; lies on back; yellow color of skin still deeper than before; hiccup occasionally yesterday and this morning, on which account an injection of a few drops of oil of amber have been administered. Ordered cold drinks with ice; repeat oil of amber if the hiccup returns.

He died between 11 and 12 o'clock on the same night; his consciousness being perfect to the last.

Autopsy 17 hours after death. *Head.*—Membranes easily detached from the surface of the convolutions; no infiltration under the arachnoid; considerable deep injection of pia mater, especially between the convolutions, soon

becoming bright upon exposure to the air; on the upper middle surface of the right hemisphere there is a red patch about the size of half a dollar, owing apparently to a slight effusion of blood into the cells of the pia mater; between two of the convolutions and imbedded in pia mater were found two rounded bodies about the size of small peas, of a yellowish white colour, which when cut into presented a cavity filled with a friable yellowish white substance; substance of brain firm and of natural colour; cortical substance very distinct; medullary presents a moderate number of red dots on its cut surface; central portions not at all softened; surface of ventricles of a decided yellow colour; no fluid in them; thalami and corpora striata natural; nothing else remarkable; cerebellum natural.

Chest.—No adhesions; both lungs supple and crepitating without tubercles or other organic lesion; when cut into, the upper lobes present a yellowish tinge, and when squeezed a spumous fluid of the same colour issues from them in small quantity, otherwise natural; lower lobes of a deep reddish brown, containing a large quantity of red spumous fluid, not at all granulated; texture rather firm, but natural. Heart rather large, but otherwise natural; valves supple, of a yellow colour as well as aorta, which is bright yellow.

Abdomen.—Liver of natural size, flabby, of a bronze colour, which becomes livid in the small lobe; internally of a uniform light bronze colour; acini distinguishable by a slight elevation, but no difference of colour in the two substances; gall bladder filled with a very dark almost black bile, perfectly fluid and thin; a very thin layer of it showing an orange colour. *Spleen* four or five times its natural size, very much softened, pultaceous, brownish black, looks somewhat like clotted venous blood. *Stomach* rather contracted, containing a small quantity of a thin dark coloured fluid. Mucous membrane thrown into folds along the great curvature; its colour, except for a few inches near the pylorus, was bister with a tinge of olive, especially along the great curvature, and with the intermixture of a red tinge in the great cul-de-sac; where the alteration of colour exists, it is softened, friable, and with difficulty raised from the submucous tissue to which it seems to be more adherent than natural; its thickness not materially altered; near the pylorus where it is pale, it is easily raised into long strips, and is of natural thickness. The mucous membrane of the *duodenum* a little softened, pale, with a slight greenish tinge, otherwise natural; glands of Brunner numerous in same part. The mucous membrane of the *ileum* was also generally pale, with a decided greenish tinge, and some red injection of vessels towards its lower part for the space of a few inches; its thickness was natural; no softening; is easily raised in strips. The glands of Peyer distinct and perfectly natural. Jejunum and upper part of ileum not opened; large intestine healthy; kidneys not examined.

In the above case the disease, preceded by heaviness in the head, commenced in the evening by a chill, accompanied with pain in the head and back, followed by free perspiration during the night. On the following day

towards evening the symptoms abated somewhat, but on the next or third day of the disease, the chill returned with more violence, followed by high fever, which continued on the 4th, the day of his admission, at which time the epigastrium was tender on pressure. On the morning of the 5th, the pulse was nearly natural and the skin warm, whereas in the evening, being an interval of two days from the second chill, the fever was high, thus clearly showing its tertian type. On this day there was also vomiting of a greenish fluid; the conjunctiva was yellow and injected, and the skin slightly yellow. His mind was clear and the senses perfect. During the remaining period the yellowness of the skin became more and more marked, the oppression and anxiety were generally very great, vomiting of greenish fluid frequent; his mind became much dejected, with some wandering and stupor. At times the tenderness of the epigastrium was excessive, with distension and gaseous resonance in the same part. He died on the 9th day. At the autopsy, nothing remarkable was found in the chest or head beyond the injection of the pia mater, the yellow colour of the surface of the ventricles, of the valves of the heart and aorta, and of the fluid pressed from the upper lobes of the lungs. The liver was flabby, of a bronze colour, the two substances blended together so as to be scarcely distinguishable; the gall bladder filled with dark bile; the spleen very much enlarged and softened, the stomach presenting evident marks of recent inflammation of its mucous coat; the glands of Brunner in the duodenum numerous, whilst the lower part of the small intestine, together with the large, were in a natural condition, the glands of Peyer being perfectly healthy. This is one of those cases of bilious remittent which, in some of their features, resemble so strongly the yellow fever. The most prominent points distinguishing it during life from the latter disease, were the evident tertian or semi-tertian type of the fever during its first stages, the absence of black vomit, and the less rapid course of the symptoms. After death the liver, instead of the pale and yellowish colour which it presents in yellow fever,* was darker than natural, of a bronze or livid colour; the spleen very much enlarged and softened; whereas in yellow fever, this organ is very frequently natural, and is rarely enlarged and softened to a great degree. The stomach contained a small quantity of dark coloured fluid, but very different from the black matter of yellow fever, judging from the descriptions of the latter. Admitting then the above case to be one of bilious remittent, and comparing the symptoms with the lesions found after death, how shall we explain the former by the latter? Doubtless the irritability of stomach, the anxiety, and oppression at the præcordium, tenderness, &c., are mainly referrible to the inflamed condition of the stomach,

* In drawing comparisons between remittent and yellow fever, I shall make use of the description of the latter as it occurred at Gibraltar, by M. Louis, as being the most complete account, particularly in reference to the post mortem appearances, of any epidemic of that disease with which I am acquainted; their applicability to other epidemics also having been subsequently confirmed by observation in the West Indies.

the intensity of some of them probably enhanced by the enlargement of the spleen and altered condition of the liver; to which latter the yellowness of the skin, conjunctiva, &c., must be referred. The gastric symptoms however, the anxiety and oppression, did not assume any thing like their greatest intensity until about the 6th or 7th day. Whether or not the inflammation of the stomach was present at the commencement, it is impossible to say, as the presence or absence of gastric symptoms during the three days previous to his admission, are not noticed. But supposing it to have existed, its severity certainly would not seem to have been in proportion to the intensity of the general symptoms. Besides it affords no explanation of the periodicity of these symptoms, the recurrence of the chill followed by fever, &c., at an interval of 48 hours from the first, and the subsequent exacerbation after a like interval. These are alike inexplicable by means of the other alterations observed, viz. of the liver and spleen; or at least we are unable, in the present state of our knowledge, to assume as even probable, their dependence upon either of these alterations as their cause.

The alteration of the liver, however, is remarkable from its peculiarity, and, as I think I shall be able to show as we proceed, well worthy of attention. Its nature is not easily determined, for besides the alteration of colour and consequent blending together of the two substances, with perhaps slight development of the acini, nothing else remarkable was observed. But even if we suppose the abundant secretion of bile to be sufficiently indicative of a state of active hyperæmia, or congestion, this will not explain the peculiar appearance of the organ, as congestion frequently occurs in other diseases, when no such peculiarity of aspect is observable. That the alteration in question was not owing to inflammation is rendered probable, when we reflect that it was uniform throughout the whole organ; that the natural red colour, instead of being increased, had disappeared; and that the diminished consistence amounted to nothing more than that state of general flabbiness in which many of the large viscera are frequently found, where no suspicion of inflammation can exist. If the symptoms are not fully explicable by the condition of the organs, neither is the cause of death, which certainly cannot be accounted for by the alteration of the stomach and spleen. The influence of that of the liver may have been considerable, though it is difficult to appreciate its amount. The state of the blood was unfortunately not noted, and to the alterations of this fluid, so frequent in remittent fever, we must no doubt look in part for an explanation of the fatal termination in some cases.

Let us observe, in conclusion, that the anatomical character of typhoid fever, viz., a lesion of the glands of Peyer, was wanting in the above case, in which on the other hand was found a peculiar alteration of the liver not met with in that disease.

The subject of the following case I did not see during life, and am in-

debted to Dr. Smith, then resident physician, for the following note of the symptoms.

CASE II.—Hugh Aken, ætat. 20, arrived 10 days ago from Savannah. The captain and three others sick. Attack came on after getting on shore, with pain in the back, limbs, &c. Recollects no chill, but constant perspiration; no cephalalgia, or vomiting. Admitted Oct. 1st, 1838; 11 A. M. Prostration extreme, extremities cold and dry, body cool and moist; pulse scarcely perceptible, very rapid; face bronzed; tongue nearly natural. R. Heat to extremities; sinapism to legs—punch—also, quinine g. j., to be taken every two hours.

Evening.—Mind less dull than in the morning. No cephalalgia; eyes dull and injected, pupils dilated, contracting with light; tongue moist and slightly furred, no epigastric tenderness; pulse a little stronger, considerably over 160—body hot and dry, extremities cold. Ordered to be put into a warm blanket—continue punch, and give gr. ii of quinine every hour.

9 o'clock.—Extremities cold and clammy, cold and heavy sweat on body. Pulse scarcely perceptible—legs not affected by sinapisms. Is apparently in the cold stage, but there are no rigors; he was directed to have gr. iv, of quinine by injection, and the same quantity by the mouth half an hour afterwards, to be repeated every three hours. About 2 o'clock on the following morning, Oct. 2d, he died.

The autopsy, at which I was present, was made in the afternoon with great care, but unfortunately, owing to my not having made any note of it until a considerable time afterwards, I can only give a general description of its prominent features. The liver was enlarged, softened, and more or less of an olive or bronzed colour; the gall bladder full of very thick, tenacious, dark coloured bile; the spleen enlarged, and very much softened. Except evidences of congestion, the other organs presented nothing remarkable—of the condition of the mucous membrane of the stomach, however, I cannot speak positively. The glands of Peyer were healthy. Head not examined. Imperfect as is the history of the above case, and short as was the period during which the patient was the subject of medical observation, we can have no difficulty in recognizing in it an example of that form of remittent fever which is usually styled congestive, or pernicious remittent, and which differs very remarkably in some of its features from that presented in the previous case. Of these differences I shall have occasion to speak more particularly when describing the symptoms. The general character of the post mortem appearances, however, was very similar in the two cases, if we except the stomach, about which nothing positive can be said: I may state, however, that this organ could hardly have presented evidences regarded at the time as indicative of decided acute inflammation, as it is distinctly stated in the notes which I made some time afterwards, that nothing of a positive character other than marks of congestion, and the alteration of

the liver and spleen, already mentioned, was found. If, then, the symptoms and cause of death are not fully explained by the post mortem appearances in the former case, still less so are they in the present instance.

I shall now go on to give a general description of the condition of the organs as observed in the seven fatal cases, two of which have just been detailed. Of the remaining five, one occurred in 1839, three in 1840, and one in November of that year, a short time subsequent to the expiration of my term of duty, and for the notes of which, as already stated, I am indebted to Dr. Stillé, then resident physician.

Brain.—This organ was examined in only 5 of the cases. The sub-arachnoid effusion was either entirely wanting or moderate, except in one case, where there was a considerable quantity of reddish serum. In the same case the ventricles contained an ounce of bloody serum, whilst in two of the others they were empty, in a third nearly so, and in the fourth contained scarcely a drachm of fluid. In one the walls of the ventricles were of a yellow colour. The pia mater was deeply injected in one case, in which also there appeared to be a slight effusion of blood into the cells in a small circumscribed space; its veins much distended posteriorly in another. The cortical substance was of a deep shade in two cases, and in none is it mentioned as being paler than natural or presenting other alteration. In two cases the medullary substance was natural, in a third it felt pasty without giving the sensation of softness, whilst in a fourth it was soft and pasty, being at the same time dry and of a milk white colour with few bloody points. In a fifth its colour was a dirty white, mixed with a faint reddish brown, its consistence natural, with the exception of slight central softening. The same condition was presented by the cerebellum, which was natural in three other cases; its condition not noted in the fifth.

The above alterations are similar to those found in other acute diseases, and must be regarded as slight and comparatively unimportant, if we except the individual in whom there was large bloody effusion in the ventricles, &c., and whose case will be reported farther on.

Respiratory Apparatus—Pleuræ.—Old adhesions were found in a few cases, but very limited in extent. In two instances there was effusion in each pleural cavity of about half a pint of a reddish brown or bloody fluid. In both of these cases the heart was flaccid, its lining membrane deep red or reddish brown, and in one the pericardium also contained several ounces of bloody serum. The lungs, on the contrary, in one of these cases, were healthy, in the other, very dark, deeply congested, without hepatisation. It is most likely then that the pleural effusion was the result rather of an altered condition of the blood, combined, perhaps, with some softening of the tissue, than upon obstruction to the pulmonary circulation. That pleural effusion was generally absent or slight in the other cases I have little doubt, but its absence is not positively noted.

Lungs.—Of the 6 cases in which these organs are particularly described,

hepatization was found in one case only, and that at the summit merely of the middle lobe. They were generally more or less supple and crepitant, sometimes dark posteriorly; in one instance yellowish in the upper lobes, but deep reddish brown in the lower, in which case also spumous fluid of corresponding colour, but most abundant in the lower lobes, issued from the several parts when squeezed. Indeed these organs presented nothing particularly remarkable, except in one instance (Case III), where they were highly congested, their colour throughout nearly their whole extent being very dark, almost black, and the tissue but slightly crepitant, though not granulated or very easily penetrated.

The condition of the lungs then was much the same as in most other acute diseases, not especially seated in these organs. It is worthy of remark that in no instance were there any of those hæmorrhagic masses frequently occurring in the yellow fever according to the description given us by M. Louis, whilst, in both, hepatization was very rare.

Circulatory Organs.—The pericardium contained a small quantity of serum in one case, and several ounces of bloody serum in another.

Heart.—This organ was flabby in 3 of the 6 cases in which it is particularly described, and combined with this flabbiness there was diminished consistence at least in two cases. In the same three cases its lining membrane was reddish brown, deep red or violet; in two of these the colouring being deepest on the right side and in the neighbourhood of the valves, and extending into the pulmonary artery and aorta. In the other 3 cases the heart presented nothing remarkable; in all, its valves were supple, and in one case of a yellow colour. The aorta was of a bright or lemon yellow in two cases.

In the 5 cases in which the state of the blood is mentioned, this fluid was found in the cavity of the heart. In one case there were black coagula mixed with red serum; in the others fibrinous coagula, soft in two, semi-transparent and greenish in another, and generally small. No large firm fibrinous coagulum was found in a single instance. Although it is impossible to say at present whether or no the blood in remittent fever presents any characters which are absolutely peculiar, it is perfectly evident that it is the seat of morbid changes which deserve especial attention.

The following case is remarkable for the presence of most of the lesions hitherto described.

CASE III.—Edward Long, ætat. 24, seaman, was admitted September 21st, 1839. Attacked about the 9th, having got inside Sandyhook, after a passage of five or six days from Georgetown, South Carolina, to New York, which place he left on the 12th for Philadelphia. According to the account of his friends, he has had a chill every day, being better in the intervals, though very weak. On the 19th, two days before admission, he was quite stupid for a time after the chill, which was not near so severe on

the following day. On the next, the chill again returned, and when brought in, 4½ o'clock P. M., the patient was in a state of perfect stupor; skin hot; pulse rather weak; pupils contracted; violent contortion of both eyes to the left side. About nine ounces of blood were taken by cups, when his pulse became suddenly thready. Sinapisms were applied to the legs, under which he reacted, and a purgative injection was given, which operated freely. The stupor continued, accompanied with stertorous breathing, and, at 9 P. M., I saw him, and took the following note.

Stupor profound; pupils small, very slightly sensible to light; is lying on his back motionless, with the head turned to the left side; deviation of the mouth to the same side; face puffy, of an earthy paleness; pulsation of carotid very strong; pulse 102, moderately strong, vibratory; skin hot, bathed in free perspiration; breathing laboured, 40 per minute; respiratory murmur pure in front; beating of heart strong; dulness on percussion over left false ribs laterally and somewhat anteriorly; spleen distinctly felt in left hypochondrium; pressure over right hypochondrium occasions a slight groan, not so elsewhere; meteorism considerable, especially below the umbilicus; no vomiting; one stool shortly after injection. A vein being opened, the pulse at first fell, when the flow of blood was stopped; after which it rose, and, the vein being again opened, became fuller, slower and stronger; 24 ounces of blood having been drawn, the pulse again fell, when the bleeding was stopped.

Ordered spirits of turpentine \mathfrak{z} i in some salt and water, as an injection; cold cloths to the head.

He died on the following morning about 2 o'clock, between nine and ten hours after admission.

Autopsy 32 hours after death. Embonpoint moderate; cadaveric rigidity very great, about the same on both sides.

Head.—Considerable serous infiltration in cellular tissue under scalp; unusually strong adhesions between the dura mater and arachnoid superiorly, near the margin of longitudinal fissure, as much as an inch from which are found a number of granulations, resembling glands of Pacchioni; considerable infiltration of reddish serum under arachnoid; pia mater very easily separable from convolutions, its large veins posteriorly very much distended; substance of hemispheres generally firm, its medullary portion of a dirty white, mixed with a faint reddish brown tint; corpora striata, thalami, and the central portions generally, forming the walls of the ventricles, somewhat softened; about an ounce of bloody serum in lateral ventricles; cerebellum less firm than usual, its medullary portion presenting the same aspect as that of the brain.

Chest.—Heart of usual size, flabby, pale and softened, its walls easily penetrated by the finger; internal surface of the auricles and that portion of the ventricles bordering upon them, of a reddish brown colour, as also the valves, which were otherwise healthy, unless it may be those of the pulmonary artery, which escaped examination; the blood in the left cavities but

slightly coagulated, a small soft yellow fibrinous coagulum in the right. Several ounces of bloody serum in the cavity of the *pericardium*; six or eight ounces of a dark reddish-brown serum in the cavity of each *pleura*; few or no adhesions. *Lungs* very dark, almost black, externally; same internally, except a small portion anteriorly and near the base, which is reddish brown; tissue not granulated, not very easily penetrated by the finger, slightly crepitating; no tubercles or other organic lesion.

Abdomen.—A few ounces of dark bister coloured thin fluid in the cavity of the peritoneum to the right of the spine, and just below the liver; none on the left side; omentum light brown; peritoneal surface smooth, without adhesions. *Liver* of moderate size, of a bronze colour bordering upon olive; internally the colour of the cut surface is uniformly the same, the distinction of the two substances lost. Gall bladder contracted; bile fluid, of a reddish orange colour. *Spleen* five or six times its natural size, very much softened, of the colour of dark venous blood, almost black internally. *Stomach* large. Mucous membrane thrown into folds, which were coloured of a deep orange yellow, elsewhere colour natural; its thickness natural except in a space about the size of the palm of the hand, in the great cul-de-sac, where it is thinned and softened; its consistence also is elsewhere natural, except that it is rather friable. In the *duodenum*, the glands of Brunner were exceedingly numerous. Throughout the rest of the small intestine nothing remarkable was observed; the glands of Peyer were healthy; the orifices of the crypts very marked, of a dark slate colour. The large intestine presented nothing worthy of note; its mucous membrane was easily raised into long strips. A superficial examination of the mesenteric glands showed no appreciable enlargement of them.

It may be doubted whether the above case ought not to be classed among double tertian intermittents, rather than remittents, a question which cannot be positively determined, as the patient did not come under observation until within a few hours of his death, and the account of his symptoms previously to admission is not such as to enable us to say whether the febrile paroxysms were followed merely by remission, or a distinct intermission. I have not hesitated, however, to introduce the case here, as the two forms of disease are, I think, in their essential nature the same, an opinion which the case before us, if it were really a pernicious intermittent, and not remittent, strongly supports, as the liver was found to present the same peculiar alteration as in the preceding cases, the spleen very much enlarged and softened, the glands of Brunner in the duodenum very numerous, the glands of Peyer natural, the intestinal canal generally and the other organs healthy, or without any lesion especially characteristic of another disease. The above case is remarkable for the number of analogous secondary lesions which it presented, viz: the bloody serous effusion beneath the arachnoid, in the cavities of the arachnoid, pleura and pericardium, the deep colour of the lungs and of the lining membrane of the heart, which was flabby, pale, and

softened; to which may be added the bister coloured fluid found in the peritoneal cavity to the right of the spine, and bordering upon the liver; the last from its position being, most probably, altogether a cadaveric lesion.

That the deep red or violet colour of the lining membrane of the heart is in great measure a cadaveric phenomenon, dependent upon a previous alteration of the blood, and of the texture of the organ, is now perhaps generally admitted, and the facts we are considering confirm the opinion, for both the conditions were united in every case where the appearance in question was presented. On the other hand, it was absent where the heart was firm, notwithstanding the liquidity of the blood, thus showing that the latter condition alone was not sufficient of itself to produce it. That the same general conditions, viz., alteration of the blood, and of the texture of the part, exercised an important influence in the production of the effusions of red serum is pretty evident from the fact of their being found only in those cases where the heart was flaccid.

Abdomen.—A few ounces of a bister coloured fluid were found in the peritoneal cavity in one case; in another a part of the peritoneal coat of the gall bladder, and of the neighbouring folds of the small intestine were of a rose colour, and covered with false membrane. The omentum, and many of the folds of the small intestine are noted in one case as olive coloured, there being no effusion in the cavity; in another the intestines were of a dingy ash colour, and pasty feel.

Liver.—Enlarged in three cases, and in one of them to a great degree, in the others it was of natural or moderate size. The consistence of the organ appears to have been generally diminished, being flabby, or softened, or both, in four cases, a little soft in a fifth, and moderately firm, but still readily penetrated by the finger in a sixth; in the seventh the consistence is not mentioned.

The colour was nearly the same in every case, but very different from natural. In most of the cases the liver is described as being of the colour of bronze, or a mixture of bronze and olive, in one as a dull lead colour externally, internally bronzed with a reddish shade; in another as between a brown and an olive, the latter predominating; and finally, as a pale slightly greenish lead colour, with a tinge of brown, in one instance. Few things are more difficult than a description of colour. The most correct idea of that before us would perhaps be conveyed by stating its predominant character, the same in every case, to be a mixture of gray and olive, the natural reddish brown being entirely extinct, or only faintly to be traced. This alteration existed uniformly or nearly so throughout the whole extent of the organ, except in a single instance, where a part of the left lobe was of the natural reddish brown hue. As the alteration of colour pervaded both substances, the two were frequently blended together, and the aspect of the cut surface remarkably uniform. In one case, however, there was a marked distinction of colour, the olive being predominant in the parenchyma, the

brown in the acini. Of the four cases in which these characters are mentioned, the cut surface is described as smooth in three, of a shagreened appearance, and rough in the left lobe, in the fourth. This last character was evidently dependent upon hypertrophy of the lighter coloured substance, which existed also in another instance, both cases, however, being examples of a very protracted form of the disease.

The nature of the lesion of the liver above described, characterized essentially by a peculiar alteration of colour, is not easily determined. That it is the result of inflammation will hardly be contended, and even if attended with congestion, (which I think very doubtful,) this could not account for it, as congestion is frequently present in other diseases where no such alteration of colour is observable, and where, on the contrary, its effect is to produce a deeper red. Some, perhaps, will look upon it as dependent upon the infiltration of bile into the tissue of the organ, but still it will at once be perceived that this presupposes a peculiar alteration of the bile and liver, inasmuch as the appearance presented is not found in other diseases, at least so far as I am aware. In saying that this lesion is found in no other disease, I wish to be understood as excepting those cases of pernicious and other intermittents, which prove fatal in the early stage, or before giving rise to well developed cirrhosis, abdominal effusion, &c. Indeed I think it highly probable that the same alteration of the liver will be found to exist in intermittents which thus prove fatal, an opinion confirmed by the case last detailed. (Case III.) In speaking, therefore, of this alteration being peculiar to remittent fever, I wish to be distinctly understood as not excluding intermittent fever, which in my opinion is essentially the same disease.

The lesion in question, then, being peculiar to the disease before us, and the only one which is so, (all the other lesions being common to it and other diseases,) and at the same time being found, as already observed, in every case, we are obliged to admit that it constitutes its essential anatomical characteristic, or at least that such is the conclusion to be derived from the cases before us. Their number, I am aware, is insufficient to establish such a point conclusively, and it therefore remains for future observers to determine whether or no the lesion we have described belongs to the disease under all circumstances. That such will be found to be the case, I confess, seems to me very probable, when I recollect that the cases we have been examining were distributed over three successive seasons, and originated, not in a single locality, but in different and widely separated places, and also that by a reference to the description of authors, it is apparent that a similar condition of the liver has been frequently observed by them, without, however, attracting that attention which it seems to me it demands. Thus we find it stated, in a dissertation on remittent fever, recently published by Dr. Shapter,* and composed no doubt after a comparison of the description of various

* See Tweedie's *Library of Practical Medicine*, vol. I.

authors, that "the liver is found enlarged, injected, and softened in structure, and is generally of a *dark*, sometimes of a *gray* colour."

It has been already mentioned that the characteristic alteration of the liver was, in two protracted cases, combined with a general development of the acini or lighter coloured substance. The following is the history of the case in which this was most marked.

CASE IV.—Alexander Hamilton, ætat. 28, native of Massachusetts, sailor, of temperate habits, was taken sick, August 9th, 1840, on board ship, two days after leaving Mobile. He had previously enjoyed good health. Attack commenced with a chill, followed by fever, pain in the back and head, and vomiting, so that he was obliged to go to bed, and was confined to his birth during the remainder of the passage. During this time he used no medicine, (there being none on board,) and was obliged to take the common fare of sailors. He was brought to the hospital in a carriage on the 1st of September. On admission, the odour from his body was so strong, the skin harsh and covered with filth, that he was put at once into a warm bath. Emaciation very marked; features contracted; expression dull and anxious; voice feeble; skin of a dingy sallow colour; spleen distinctly felt under left false ribs, where there was soreness as well as in the right hypochondrium; pulse feeble. The spirits of mendereri were prescribed for him, but, after a few doses, there was so much sickness of stomach, the matter vomited being green, in parts a little ropy, and in quantity about half a pint, that it was omitted; the effervescing draught substituted, and a blister applied to the epigastrium. Diet, barley water and gruel. No diarrhœa. During the first ten days, his general condition was as follows. Emaciation progressive; memory defective; intellectual faculties feeble; no delirium or incoherence; answers without hesitation; sight and hearing seem to be unaffected; some headache at first; no epistaxis; tongue pale, the paleness progressively increasing, generally dry posteriorly and in the centre; thirst considerable; pulse always feeble, its frequency and volume varying considerably, sometimes connected with increased heat of skin. These febrile exacerbations were more marked on certain days than others, but whether there was any regularity in this respect, I cannot certainly say. Skin generally rather harsh; no cough; no diarrhœa; bowels occasionally opened by enemata; vomiting of a glairy thin fluid occasionally; tenderness of epigastrium; abdomen rather retracted; no rose coloured spots. He took a moderate quantity of wine whey, with occasionally a little opium. On the 9th, some chicken soup and calf's foot jelly were directed, which he relished very much for a few days and then took with indifference. About this period diarrhœa came on, the stools at times involuntary, and the urine, which was high coloured and of a strong odour, was drawn off by the catheter. The emaciation continued to progress, the skin became more shrivelled, and the yellow tint more marked, with slight wandering of mind and trembling of hands. He lay with his legs drawn up, sometimes on the side and sometimes on the back. There

was generally more or less soreness of the epigastrium, and a few days before his death, upon careful examination, it was found that the percussion was dull below the false ribs on the right side and near the median line, in a space about two inches in height by rather less in breadth, where the resistance was much greater than on the corresponding part of the opposite side, and the tenderness also very great, but no distinct tumour was felt. During the last few days of his life, no new symptoms appeared; the strength failed; the skin became of a more leaden aspect; there was no recurrence of vomiting; stools involuntary, with retention of urine; slight nocturnal delirium, one or two nights before the fatal termination, which took place on the 20th of September, forty-three days from the commencement of the disease.

Autopsy.—September 21st.—Great emaciation; no œdema, except in perineum and scrotum, which was much distended by effusion of air and serum.

Brain pale externally, especially over anterior lobes; posteriorly veins somewhat injected. Arachnoid easily raised, transparent, though slightly injected, and, over the anterior lobes, elevated in spots by small air bubbles, giving it a granular appearance. The white and cineritious substances distinct, throughout firm and of natural colour; scarcely a drachm of fluid in the lateral ventricles, none elsewhere. Cerebellum natural.

Chest.—Half a pint of bloody fluid in each pleural cavity; slight old adhesions on left side. *Lungs* perfectly supple; more or less emphysematous throughout; pale in the upper, and reddish brown in the lower lobes; no tubercles or other lesions. Heart softened and extremely flaccid, its walls of natural thickness. Upon removing it from its attachments, a quantity of fluid blood issued; the right cavities contained a very small quantity of thin, red, watery fluid, with a very small fibrinous coagulum; their lining membrane of a deep red colour throughout, approaching to black near the valves; same appearances presented in left cavities, but less marked; valves supple and otherwise natural; the lining membrane of the aorta and pulmonary artery, and their valves, which were supple and otherwise natural, had the same red colour; surface of this membrane smooth.

Abdomen.—All the solid viscera flaccid and much softened. The peritoneal covering of part of the gall bladder, as well as that of some of the intestinal folds in its vicinity, of a rose colour; the folds glued together by a false membrane, which was also effused upon the surface of the gall bladder. *Stomach* considerably enlarged, containing about three ounces of dark, dirty brown fluid. At its larger extremity the parietes felt thin; the mucous membrane was smooth and shining; a portion of it dyed red in large patches and along the course of the vessels; raised without difficulty in short strips; its thickness not remarkable. The lining membrane of the rest of the organ was of a pale slate colour, slightly corrugated along the great curvature, and, everywhere mamelonated, most markedly so towards the pylorus; its thick-

ness and firmness evidently increased, more easily raised into strips than natural; no vascular injection or ulceration. The inner surface of the *duodenum* rough, owing to the development of the mucous follicles with which it was thickly studded for about eight inches; its mucous membrane softened and thickened, as was also that of the whole small intestine, which presented nowhere any ulceration or injection, and, in its lower part, was remarkably pale. In the upper portion were a few diffused blackish patches, over which the mucous membrane was thinner and softer than elsewhere. Glands of Peyer distinct, neither elevated nor injected. The solitary glands unusually developed in the last two feet of the ileum. The large intestine presented nothing worthy of note. *Liver* of natural size, 11 inches long by 9 broad; its proper coat readily raised up. The surface of the liver, when deprived of its coat, presented a shagreened appearance, evidently owing to hypertrophy of the lighter coloured substance; and was of a pale, slightly greenish lead colour, with a tinge of brown. A section presented the same characters, except that the shagreened appearance was less evident, the distinction of colour between the two substances being more slight. This condition of things uniform throughout, except that it is most marked in the left lobe, where the surface is rough and the natural reddish brown hue nearly extinct. *Gall-bladder* contained a large quantity of thin bile, mixed with a grumous deposit, some of which adhered to the inner surface of the organ, whose mucous coat was thin, soft, readily detached from the adjacent coat, and devoid, in part, of its honeycomb appearance. *Spleen* exceedingly soft and pulpy; of the colour of lees of red wine; 7 inches in length by 4 in breadth, and 2 in thickness. *Kidneys*.—Their substance easily broken up; their cut surfaces presenting an ecchymosed appearance, particularly along the boundary between the cortical and tubular portions, and most marked in the left kidney. The bladder was distended by at least a pint and a half of deep coloured urine; its muscular coat greatly developed. The disease here commenced with the usual symptoms, chill followed by fever, pain in the head and back, and vomiting, and was no doubt aggravated during the first three weeks by bad diet and the want of proper attendance. He was admitted into the hospital on the twenty-third day of his disease, and, during the remaining three weeks, the remissions were comparatively obscure; the emaciation progressive; the skin at first sallow, becoming more and more yellow; the stomach irritable, with tenderness at the epigastrium; enlargement and tenderness in the region of the spleen, with absence of diarrhoea, until within the last ten or twelve days, and with only slight nocturnal delirium for a day or two before his death. Upon examination, the same general appearances are found as in the preceding cases, the spleen enlarged and softened; the stomach presenting evident marks of inflammation; the liver of a pale slightly greenish lead colour, with a tinge of brown; the acini at the same time being developed so as to give it a shagreened appearance. This latter must be regarded as commencing cirrhosis and is

particularly interesting, when we consider that it was found only in those cases where the disease was protracted, or at most was but faintly traceable in one or two others, and that fully formed cirrhosis is so frequently met with in those who die after suffering for a long time from the effects of marsh fevers. These considerations give a new importance to the primary lesion of the liver which I have described, inasmuch as they seem to show that its natural tendency, when long continued, is to pass into cirrhosis, and thus lay the foundation of some of those chronic disorders to which the disease frequently gives rise.

The inflammation of the gall bladder and the peritoneal covering of the neighbouring intestinal folds, was evidently recent, and probably developed during the latter stages of the disease, at least no distinct evidences of its existence were observed until within a few days of the patient's death. With the exception of the thickening and softening of the mucous membrane of the small intestine, the commencement of which cannot be dated farther back than about two weeks before death, within which period diarrhoea first made its appearance, the remaining lesions were similar to those found in the preceding cases. The general flaccidity and softening of the organs, however, appear to have been marked more in the present instance. The perfect healthiness of the glands of Peyer is particularly worthy of note, on account of the altered condition of the mucous membrane of the small intestine generally, and the long continuance of the disease.

Having already stated that the lesion of the liver to which I have so often alluded, was found in every case of remittent fever which I have examined, I must now mention, in order that the reader may have an opportunity of forming his own judgment, that the organ was found nearly healthy in the case of an individual who at the time of his admission was supposed to be labouring under remittent fever; a supposition, however, which the subsequent course of the symptoms was calculated to render doubtful. The following is its history:—

CASE V.—Wm. Jones, ætat. 23, born in Pennsylvania, seaman, entered the hospital Oct. 3d, 1840. He stated that he had recently arrived from Richmond, Virginia, and that whilst on board the vessel in the Schuylkill, on the 28th of September, six days before admission, he had been taken with pain in the head and back, chilliness, loss of appetite, and weakness. On the third day he had a chill followed by fever, and the next day but one by another chill; since then has had no chill, but constant fever, pain in his head, and thirst; was confined to his bed. On the 3d, the day of admission, he was very feeble; expression dull and dejected; answers slow; memory rather defective, complained of pain in the head and epigastrium; pulse feeble and frequent; skin warm; no vomiting; bowels confined. Has taken one or two doses of salts, during the first week of his illness. A dose of blue mass and rhubarb was administered, which operated slightly. In

the evening he was very restless, would not keep the clothes on his bed, and was slightly delirious.

On the 4th, very dull; extremities cool; pulse feeble and frequent; tongue very dry, and covered with a thick brown crust, as since entrance. Mustard to legs, enema of spirits of turpentine, sulph. of quinine, gr. viii, by the mouth.

At night the extremities were rather warmer, but the dulness of intellect, restlessness, and delirium persisted; the sinapism had not reddened the skin after five or six hours. R. Calomel, Rhei āā, gr. x.

On the 5th, same symptoms, only more intense, when a blister was applied to the epigastrium, the sulphate of quinine repeated, and small doses of calomel and opium given every two hours. In the evening sinapisms were again applied to the legs.

6th.—So delirious last night that he was confined in bed; is now muttering; stupor marked; complexion very slightly sallow; conjunctiva a good deal injected, very slightly yellow; forehead moist; skin of arms cool, of trunk moderately warm, soft; pulse 114, small and feeble; tongue dry, chapped, brown; impulse of heart strong, as well as sounds; respiration natural anteriorly; belly retracted; spleen distinct below ribs, the dulness on percussion extending laterally upwards for full three inches; vomited a dose of effervescing mixture this morning; stools in bed, liquid, brown, and fetid. R. Liq. ammoniæ acet. ʒss. every two hours.

On the following morning, the intelligence was much clearer, the pulse fuller, but still about the same frequency; tongue moist, clean around the edges, crust separating; restlessness diminished; stools voided in bed as previously. Cal. et op. continued, with liq. acetat. ammon. and sulph. quinine. In the evening rennet whey.

8th.—Same condition; tongue cleaner; prostration marked. Omit cal. et op., and continue rennet whey.

From this time Jones became gradually weaker; his features sunken; no decided sallowness, but rather a leaden hue of complexion; the delirium continued, at times muttering, at others more active, on the last day declining into stupor, when his features were collapsed; hearing most remarkably dull, constant tremulousness of hands, which, together with the feet, were cold; no subsultus; pulse very frequent, small, and feeble; no vomiting, as throughout illness, except on the morning of the 6th; belly retracted, as before; no marked tenderness at epigastrium; urine passed in bed; the stools continued involuntary. Moderate doses of wine whey and other stimulants were given internally, poultices to legs, body rubbed with warm brandy, &c. In the course of the disease, also, a blister was applied to the back of the neck. He died on the evening of the 11th, at 11 o'clock.

Autopsy. Exterior.—Moderate rigidity and emaciation. Muscles dark.

Head. Veins of dura mater moderately injected; considerable sub-arachnoid effusion, especially at left; veins between convolutions much engorged

at left, moderately so at right; on the upper surface of the left anterior lobe, the arachnoid was brilliantly red, and upon raising up the membranes, they were found to be adherent to the surface below, which in part was slightly torn; at right anteriorly the injection was slight, and the adherence less; on the middle and posterior lobes of the left side, the pia mater is more injected than at right, the injection extending between the convolutions; it is also adherent, though less so than anteriorly, but more so than on the corresponding lobes of the opposite side; the whole upper surface of the brain at left, was less consistent than at right; internal parts of brain presented nothing remarkable; red points numerous; two teaspoonfuls of clear water in lateral ventricles; about an ounce of effusion at the base of the brain; nothing else worthy of note.

Chest.—No adhesions or effusion in right pleura. Upper lobe of right lung supple, pale; its cells dilated; the middle lobe is solidified, reddish brown, granulated, sinks in water, is easily penetrated, and, when pressed, gives exit to a large quantity of dirty-coloured purulent matter; the lower lobe supple, crepitating, of natural texture, containing black blood. *Left lung* adherent throughout, supple, crepitating, without consolidation, reddish brown, posteriorly livid. No effusion into pericardium, or adhesions. Heart of natural size, containing firm fibrinous coagula; its walls firm; its lining membrane and valves natural.

Abdomen.—*Stomach* containing a dark greenish fluid; its capacity not remarkable. The whole mucous membrane is covered with a thick tenacious mucus; in the great cul-de-sac and larger curvature it is thrown into rugæ, which are ecchymosed in the former, of a yellowish green, in the great curvature, the intervening membrane grayish, and covered with numerous red points; in the great cul-de-sac the mucous membrane is thickened, and slightly softened, the same throughout, the consistence increasing and becoming firmer than natural as you advance towards the pylorus; in the pyloric fourth of the stomach, the mucous membrane is of a darker colour, which penetrates to the peritoneal coat, and the mucous follicles are remarkably developed. Mucous follicles of *duodenum* greatly developed. The whole small intestine contains a pasty mucous, of an olive colour, with which also the mucous membrane is deeply dyed except in the lower part of the ileum, where the contents, as well as the membrane, are of a reddish brown; thickness of the mucous coat natural; no ulcerations in any part; the plaques of Peyer not remarkable, until within a few feet of the termination of the ileum, where they are of a deep reddish brown, almost livid, darker than the surrounding mucous membrane, a little elevated, especially the last one, near the ilio-cæcal valve, the elevation being due to swelling of their mucous membrane, the sub-mucous tissue presenting no marks of alteration, and the glands in other respects being natural; the mucous membrane generally of this lower part of the intestine was injected for about a foot and a half. *Large intestine* contains a large quantity of greenish coloured, soft

matter; nothing else remarkable. *Liver*—upper surface reddish brown, mottled; same reddish brown internally; rather firmer than natural; two substances very distinct, the light preponderating, somewhat like commencing cirrhosis; size about natural. *Gall-bladder* $4\frac{1}{2}$ inches long, by $2\frac{1}{2}$ broad, filled with very thin bister coloured bile, with scarcely a trace of greenish or orange even when spread out in a thin layer; its mucous membrane natural, of a deep olive. *Spleen* double its natural size, somewhat softened, not pultaceous, of a reddish brown. *Kidneys* nothing remarkable; commencing granular appearance in the right one.

The statement of the patient in reference to the circumstances of his attack, the chill repeated after a period of 48 hours, &c., together with the absence of decided evidences of any other disease, led at first to the supposition that the above case was, as has already been mentioned, one of remittent fever. The subsequent course of the symptoms, however, did not at all accord with this view. Thus the delirium, which was present on the evening of the day of admission, persisted on the following evening, accompanied with a tendency to stupor, and, during the night of the 5th, was so violent that the patient was kept in bed by force. On the morning of the 6th, there was muttering and marked stupor, and except that the intelligence was clearer during the two following days, the delirium continued, at times muttering and at others more active, declining on the last day into stupor. The pulse was frequent and feeble, the stools involuntary; the skin without decided sallowness, much less yellowness, notwithstanding the continuance of the disease fourteen days. There was no vomiting, except on the 6th, and that after a dose of medicine; the tongue was dry, brown, and, during the last days of his life, there was constant tremulousness of the hands, which, as well as the feet, were cold. These symptoms, especially the permanency and character of the cerebral disturbance, the frequency and feebleness of the pulse, much more nearly resembled those of meningitis than of remittent. On examination after death, undoubted evidences of inflammation are found on the convex surface of the brain, especially of the left anterior lobe, the superficial layer of cerebral substance being softened on the same side. Along with the evidences of meningeal inflammation, there was not only absence of the peculiar alteration of the liver, but also of other changes belonging to remittent fever. Thus there were firm fibrinous coagula in the heart, a condition not once found in the cases of remittent; and, although the spleen was moderately enlarged and softened, its aspect was totally different from the dark-coloured pultaceous mass observed in the other cases mentioned. Besides, enlargement and softening of the spleen, as well as the inflammation of the mucous membrane of the stomach and other secondary lesions found in the present instance, are found more or less frequently in meningitis as well as in other acute inflammatory affections. If then we consider the accordance of the symptoms with those of meningitis, the evidences of this inflammation after death, with the absence not merely of the

lesion of the liver, but of other alterations usually observed in remittent fever, I think we can have little difficulty in admitting that the case must be regarded as one of meningitis. If any one should feel disposed to look upon the latter as a mere complication, let him recollect that the dulness, delirium, feeble and frequent pulse, &c., were present as early as the sixth day, the period of admission; that the subsequent course of the disease was in accordance with that of simple meningitis, there being an absence of symptoms characteristic of any other affection; and that the previous history of the case (the perfect accuracy of which we cannot rely upon, as the patient was dull and his memory defective) is not at variance with the interpretation we have adopted, as the repetition of the chill at a regular interval is occasionally found at the commencement of various acute diseases. That it was not a case of typhoid fever is sufficiently evident from the absence of lesion in the glands of Peyer, other at least than a deep red colour with a little elevation of a few of them, the mucous coat only being involved in common with that around them.

The above case then does not invalidate the truth of the statement, that the alteration of the liver was found in every case. It affords an example of the danger, during a time of general prevalence of any particular disease, of too hastily classing with the prevailing affection every case, especially if, as in the present instance, rather obscure, which may offer some analogous features. And, further, had not the condition of all the principal organs been observed and recorded, so as to afford the means of a careful comparison with the symptoms, the case might readily have been regarded as one of anomalous remittent, in which the characteristic alteration of the liver was absent.

Whatever may be the results of future observation in reference to the constant occurrence of this lesion, and even if the conclusion to which I have arrived, that it constitutes the *essential* anatomical characteristic of remittent fever, be found erroneous, owing to its absence in a certain portion of cases, it is still worthy of attention. It certainly constitutes a most peculiar and important anatomical feature of the disease. Its connection with certain symptoms during the early and middle period of the disease, its tendency to pass into cirrhosis in protracted cases, and thus lay the foundation of certain chronic organic alterations, abdominal effusion, &c., and the assistance it must afford in determining in fatal cases the diagnosis between remittent and other fevers, are sufficient to convince us of its claims upon our attention. The striking difference between it and the alteration of the liver which belongs to yellow fever is particularly interesting, especially as it was found quite as strongly marked in the case which most nearly approached to the latter disease, as in any of the others. Whilst in remittent the liver is of a dull bronze or between a gray and olive, in yellow fever it is pale and of various shades of yellow, as straw yellow, gum yellow, &c. In typhoid fever the liver appears to present no other change of colour than

what arises from an increase or diminution of the red tint, being sometimes of a darker red, at others paler than natural.

Before concluding this part of the subject, I will mention that in the only case of marsh fever examined during the past season at the Blockley Hospital, under the charge of my friend Dr. Gerhard, the liver, which was submitted to my inspection, presented the same peculiar characters already described as belonging to remittent fever.

Gall-bladder.—Contrary to what occurs in yellow fever, the bile was most commonly abundant. In one instance, however, there was only an ounce of this fluid in the gall-bladder, which was contracted also in another. Not only was the bile abundant, but commonly fluid and quite thin. There was nothing uniform in the colour. With the exception of the case already detailed (case IV), in which the gall-bladder was the seat of recent inflammation, the organ appears to have presented no lesion of importance. In one case, however, its condition was not noticed.

Spleen.—This organ was enlarged and softened in every instance, and generally to a great degree. Thus in three cases, where the measurements are given, it was about seven inches long by from four to five broad, and in three others the lowest degree of enlargement is stated at from four to five times the natural size. In the seventh the degree of enlargement is not noted. The softening also was great, amounting generally to pulpiness, and as the colour was dark, the aspect of the organ was frequently very much that of a sac containing black clotted venous blood. Mere enlargement and softening of the spleen are not at all peculiar to remittent fever, inasmuch as they are found in various acute diseases, especially in typhoid fever, where the spleen is almost always increased in size, and very generally softened. There appears to be this peculiarity, however, in the disease before us, viz., that the enlargement and softening were not only constant, but uniformly considerable in amount. When we consider this circumstance in connection with the fact that the lesion of the spleen is often accompanied in remittent fever with pain and tenderness in the left hypochondrium, we are obliged to admit that it is not altogether similar to that found in other diseases, especially typhoid fever. At the same time there is nothing in the appearance of the organ to distinguish it in individual cases from an analogous alteration occurring in other diseases. Upon comparing the condition of the spleen in remittent with that observed in yellow fever, we again find a striking difference between these two diseases, for in the latter the organ is remarkable for its almost uniform freedom from any considerable morbid alteration.

Stomach.—Variable in size, it contained in three of the five cases in which its contents are noted, a dark or dirty brown fluid, and in the two others, a bright yellow, or yellowish green matter. In five of the six cases in which the condition of the mucous coat is particularly noted, marks of inflammation were present, the membrane being mamelonated in three; thickened in two; thinned throughout in one, in the great cul-de-sac in an-

other; softened throughout in one, especially along the great curvature in another, the softening limited to the great cul-de-sac in a third; firmer than natural in two. The colour in one case was between bister and olive, with a mixture of red in the great cul-de-sac; in another of a pale slate colour, except in great cul-de-sac, where it was dyed red in large patches, and along course of vessels. In one it was covered with a thick coat of tenacious mucus, in another with patches of lymph, giving it the appearance of being daubed with white paint. These various alterations were so combined as to leave little doubt of the presence of inflammation in the five cases mentioned. In the sixth the mucous membrane was of natural colour, except along its folds, which were of a deep orange yellow; its consistence and thickness diminished in the great cul-de-sac, elsewhere natural, except that it was rather friable. So that if in this case the mucous membrane was not perfectly healthy, there are at least no evidences of its having been the seat of inflammation. It was in this case that the disease approached so nearly to intermittent.

This frequency of inflammation of the stomach is very analogous to what is observed in yellow fever, but much greater than in typhoid fever, whilst at the same time the gastric symptoms are much more prominent in remittent than in the latter disease. The following is an example of the lesion under consideration.

CASE VI.—Horace Foster, ætat. 22, born in New Jersey, seaman, of moderately temperate habits, entered Aug. 14th. Attacked Aug. 10th, in Philadelphia, having arrived a short time before from Wilmington, North Carolina, with headache, and vomiting of bitter matter, accompanied with severe pain and distress at the epigastrium.

On admission, Aug. 14, cephalalgia, uneasiness at epigastrium, and nausea; not much activity of pulse, or heat of skin. An abundant eruption of urticaria on body and limbs; a similar eruption had shown itself and disappeared, during the four days previous to admission. An emetic of ipecac. gr. xx, was administered, and on the following morning the skin was soft and natural, the pulse good, and the gastric symptoms much relieved; eruption entirely gone, intellect perfect. In the evening he complained of nausea and oppression at the stomach, when a dose of calomel and ipecacuanha was administered, followed by an opiate, and three scarified cups applied to the epigastrium. On the 16th, the epigastric symptoms had not notably diminished, and the tenderness on pressure was considerable; bowels freely opened. Eight ounces of blood were taken by leeches from the epigastrium, and immediately afterwards wishing to evacuate his bowels, and being placed upon the chair at his bedside, he fainted, and was slightly convulsed. In about three minutes he was laid in bed, when his sensibility gradually returned, but the extremities were very cold, and so continued on the 17th, when they were rubbed with oil of turpentine, and 20 grs. of quinine with 30 drops of laudanum, given by enema. A blister also was applied to the

epigastrium, and pills of blue mass and rhubarb ordered every two hours. About this time the skin began to become more yellow, and the intelligence to get dull. On the 18th, cold was applied to the head, and grs. xii. of sulph. of quinine given by the mouth. On the 19th, the extremities, which had not yet regained their natural heat, though much warmer than on the 17th, were excited by sinapisms, and in the evening quinine was again thrown into the rectum. A blister was applied to the back of the neck. At this time insensibility was almost complete, and, the symptoms gradually increasing, he died early on the 20th.

The following account of the autopsy, made twelve hours after death, was drawn up by Dr. Stillé:—Skin everywhere yellow, ecchymosed stripes in depending parts; rigidity marked; abdomen flat and hard; muscles of trunk dark red; strongly developed and firm; fat abundant and firm. *Brain* of an ashen hue; a little injection, and slight opacity in several points of arachnoid along longitudinal sinus; no pus, no sub-arachnoid effusion; no adhesions of pia mater to brain; cortical substance dark and distinct; medullary milk white, studded with a few bloody points on section, soft, pasty, and very dry; not a drop of fluid in ventricles; all central parts of the brain very distinct, but soft; not pulpy, but pasty; half an ounce of bloody serum at base.

Chest.—Lungs free; left, ash coloured, crepitant, but a little dark posteriorly; summit of middle lobe of right, firm, friable, dark red, section granular, containing but little air. *Heart* firm and pale; from the veins flowed a thin red liquid, mixed with soft, clear yellow clots; same kind of blood and clots in ventricles; valves natural; aorta lemon yellow.

Abdomen.—Intestines moderately distended, of a dingy ash colour and pasty feel. *Spleen* about 7 in. by 5, and $2\frac{1}{2}$ thick, soft, dark, friable. *Liver* heavy, rather large, smooth, of a dull bronze colour; section very smooth, component parts indistinct; consistence nearly natural, a little soft; its blood very thin and serous. *Gall bladder* distended with a thin granular fluid, which, when in bubbles, presented a deep orange hue; mucous coat of a deep bronze. *Stomach* long, narrow, yellow, containing nearly its full of dirty brown liquid; internal surface covered with a thick coat of yellowish brown tenacious mucus; mucous membrane corrugated in the middle, smooth at either end, everywhere thickened, consistence natural in the great cul-de-sac, much increased in the middle and lower end; no injection, or ulceration. *Duodenum* studded with minute elevated round bodies, half a line in diameter, with a dark central point. (Brunner's glands.) *Intestine* contained an orange coloured pultaceous matter; valvulae conniventes remarkably distinct; mucous membrane natural, without injection or softening, perhaps slightly thickened. Peyer's glands very distinct in lower two-thirds of intestine, honey-combed, *i. e.* dotted with depressed dark points, their outline well marked, their sub-mucous cellular tissue not hypertrophied, and neither they nor it injected; no ulcerations; mesenteric glands natural. *Large intestine* distended moderately, contents pale and

pasty, not yellow; nothing else remarkable. *Bladder* distended by half a pint of orange coloured clear urine.

Attacked four day previous to admission with headache, vomiting, pain and distress at the epigastrium; this patient entered the hospital on the fifth day of the disease, or at the commencement of the third tertian period. Besides the headache, gastric symptoms, slight activity of the pulse and heat of skin, there was a general eruption of urticaria, which had been present for a time previous to admission, probably during the preceding exacerbation. An emetic of ipecacuanha being administered, on the following morning the symptoms were so much abated, as to give the appearance of convalescence, an effect doubtless owing much less to the action of the emetic than to the natural termination of the exacerbation, for in the evening the gastric symptoms returned, and, notwithstanding the repetition of the emetic combined with calomel, assisted by topical depletion to the epigastrium and followed by an opiate, they had not on the following morning notably abated, whilst the tenderness was considerable. Subsequently, the remissions were less marked, and indeed, from the imperfection of the notes, (they not having been taken at the bedside,) it is impossible to follow them. About the eighth day the skin became more yellow, the intelligence dull, the extremities were cold as on the previous day, and never afterwards regained entirely their natural warmth. He died on the eleventh day, and on examination we find the liver heavy, of a dull bronze colour, its section very smooth, the component parts indistinct; the spleen enlarged, dark and soft; the stomach yellow, contracted, its mucous coat covered with a thick layer of yellowish brown tenacious mucus, every where thickened, and firmer than natural in the middle and lower portions; the other organs presenting no important alteration. Here again we have the same general condition as in the other cases, with the absence of those lesions which are essentially characteristic either of yellow or typhoid fever.

The more or less frequent presence of inflammation of the stomach in various fevers and other acute diseases, is a fact now so well understood, that it is hardly necessary to attempt to refute the opinion which would refer remittent fever to gastritis as its cause. Indeed, not to speak of its absence in one of our cases, (which might be objected to, as its type was perhaps intermittent,) every one will admit that it is impossible to explain all the symptoms by means of the inflammation of the stomach alone. It then follows, in order that we may be able to account for some of the most characteristic symptoms, that the inflammation of the stomach *necessarily* gives rise to some other lesions on which these symptoms directly depend. Now the only other important and uniform lesions were a peculiar alteration of the liver and enlargement with softening of the spleen, and, if these were a mere consequence of the gastritis, why are they not produced under other circumstances where this inflammation exists? Why, in yellow fever, where gastritis is so frequent, is the alteration of the liver so different, and

the spleen so exempt from disease? Besides, in the case above referred to, where the stomach does not appear to have been the seat of inflammation, the liver and spleen presented the same lesions as in the other cases.

Duodenum.—The mucous membrane, although not accurately described in every case, seems to have presented nothing worthy of especial mention, except that it was thickened and softened in one instance in common with that of the small intestine generally. Its mucous follicles, or glands of Brunner, however, were remarkably distinct in all the six cases where the duodenum was particularly mentioned. To say that the development of these bodies was anomalous in every instance, would perhaps be going too far, but there can be little doubt that it was so in most. In two instances it was accompanied by a similar enlargement of these bodies in other parts of the small intestine, an example of which will be found in the following case, which occurred in November last, after the expiration of my annual term of duty, and for an account of which I am indebted to Dr. Stillé.

CASE VII.—William Branch, a seaman, ætat. 25, was brought to the hospital, November 12th, 1840, about 11 A. M. Between 12 and 1 P. M., I was called to see him in the absence of Dr. Stocker. He was pulseless, his extremities cold, his face pale and somewhat blueish, his eye rolling vacantly, pupil dilated; his whole body agitated, turning from side to side; he appeared to listen to questions, but made no articulate reply. Abdomen not distended; the skin over it vesicated. I was told that the persons who had brought him to the hospital, had stated that he had the “Southern fever,” but I could learn nothing more concerning him. Stimulating poultices were ordered to extremities, an emulsion of turpentine was given per anum, his body was rubbed with spirits, and some brandy forced down his throat. He struggled violently against receiving the enema, but did not, I believe, speak intelligibly. No change for the better took place, and he died about 4 P. M. of the same day.

Autopsy twenty-four hours after death, in clear, cold weather. Stature about 5 feet 7 inches; rigidity marked; surface pale; a few ecchymosed spots in depending parts; no emaciation; cuticle of abdomen raised, as if by a blister; face not distorted; muscles firm, of full development, and dark red colour; sub-cutaneous fat a quarter of an inch thick.

Chest.—*Lungs* crepitant, dark on their posterior faces, without hepatization; pleuræ smooth and not injected. *Heart* about as large as fist of subject; its muscle firm; the cavities containing one or two small, fibrinous semi-transparent coagula, of a greenish hue; valves healthy. Blood in veins liquid and dark.

Abdomen.—No effusion. Omentum olive coloured; many folds of the small intestine of the same colour. Mesenteric glands small, not injected. Peyer’s glands not developed; solitary follicles much so, in the whole length of the small intestine, but notably in the duodenum, in the first two inches of which they were set so closely together as to give to the mucous surface

the appearance of a grater. *Stomach* inflated, half filled with a yellowish green pasty fluid; mucous membrane soft and thin in the great cul-de-sac, elsewhere firm, rough, mamelonated, and covered with patches of lymph, looking as if they had been made by applying white paint here and there with a brush. *Spleen* 7 inches long, 4 broad, and 3 in thickness, of a rounded form and very soft. The *liver* filled the right hypochondrium, the epigastrium, and a portion of the left hypochondrium, where its peritoneal coat was adherent to that of the spleen. Its length was 16 inches, its breadth 8, and its greatest thickness 3 inches; it was very heavy; over its surface ramified a number of fine silvery vessels, supposed lymphatics; its colour was between a brown and an olive, the latter being predominant and chiefly given by the parenchyma, the former by an infinite number of small round spots about half a line in diameter. A section of its substance was smooth and glistening, and offered the same colour and distribution of parts as the surface. Its texture was moderately firm, the finger penetrating it readily. Its large veins contained liquid and dark blood. *Gall-bladder* not noted.

Notwithstanding that the patient was seen only a few hours before death, and that we are perfectly ignorant of his previous history, beyond the mere fact that he was a seaman, and supposed by those who brought him to the hospital to be labouring under "Southern fever," we can have no doubt that their view of the case was correct; for not only did the concluding symptoms correspond to those of pernicious remittent, but, after death, the same lesions were found as in the other cases. The liver was much enlarged; its colour between brown and olive, the latter predominating; its section smooth and glistening; the spleen very much enlarged and softened, and the mucous membrane of the stomach inflamed, being rough, mamelonated, and covered with patches of lymph, except in the great cul-de-sac, where it was thinned and softened. The development of the isolated follicles, instead of being limited to the duodenum, where, however, it was most marked, was not only very decided, but existed throughout the whole length of the small intestine. The glands of Peyer were healthy.

No especial importance can of course be attached to the simple enlargement of the isolated follicles, which is common to a number of diseases, without our being able to associate it with any particular symptoms. It is, however, well worthy of attention, that, in the cases before us, there seems to have been a remarkable tendency to the enlargement of these bodies in the duodenum.

Small intestine.—No lesion of importance was found in this organ in any case, if we except the one where its mucous membrane was throughout softened and thickened, in which case, it will be recollected, the disease was very protracted, and accompanied towards the close by diarrhœa. The glands of Peyer were uniformly healthy. In two cases the isolated follicles were unusually developed; in one of them (the case last detailed) throughout

the whole extent of the small intestine; in the other, in the last two feet of the ileum. The contents, where noted, were of an orange colour.

Large intestine.—In one case its condition is not mentioned. In five others, it was healthy or offered nothing worthy of note. In the seventh, where the disease was complicated with severe dysentery, the mucous membrane was softened and studded with numerous ulcerations, some of them extending as deep as the muscular coat, which, together with the sub-mucous tissue, was thickened.

CASE VIII.—Susan Queen, *ætat.* 28, unmarried, a domestic, born in Ireland, entered the hospital Oct. 6th, 1840. She had been about a year and a half in America, and during the greater part of that time had resided in New York, but subsequently went to Savannah in Georgia, where she was attacked with her present illness about a month or six weeks ago. No satisfactory account was obtained of her symptoms previous to admission. The following is the general character of her symptoms during the week which elapsed between her admission and the fatal termination.

The skin, sallow at the time of her entrance, became more and more yellow as the disease advanced. Emaciation extreme; features very much contracted; mind feeble, but no delirium, until within a few days of her death: constant moaning; prostration extreme; lay mostly on the right side, with the legs drawn up; pulse small and feeble; tongue covered with dark brown fur; no difficulty of deglutition; abdomen hard and tender on pressure; no vomiting; no appetite; eight to twelve stools in 24 hours, at times bloody and watery, at others yellowish but fluid, of a very penetrating and sickening odour. On the 6th, the day of her admission, a grain of acetate of lead and one-fourth gr. of opium were directed to be given three times a day. On the following morning, however, as the pulse was more active and frequent, the skin hot, and the tenderness of the abdomen on pressure was considerable, the pills were omitted, and a blister six inches square was directed to the abdomen. In the course of the day an enema of cold flaxseed tea was also prescribed, and in the evening one of sixty drops of laudanum. Subsequently she was put upon the use of calomel and opium in small doses, and on the evening of the 9th it was thought necessary to stimulate her with milk punch. She died on the 13th, at 5 in the morning.

Autopsy, 31 hours after death.

Brain.—Dura mater pale. Arachnoid smooth, transparent, some infiltration beneath. Veins of pia mater containing but a moderate quantity of blood; red injection natural, or rather less than natural. Membranes easily raised from the convolutions. The two substances of the brain very distinct; the cortical of a deep colour; both of natural consistence, quite firm, the medullary having a pasty feel; the red clots not remarkable. Scarcely any serum in the ventricles. Cerebellum natural.

Chest.—Old adhesions at the summit of the left lung; none at right. Both

lungs were supple and crepitating throughout, and presented nothing worthy of note. The *pericardium* contained a small quantity of serum. The *heart* was of moderate size and flabby. Its right ventricle contained a considerable quantity of black coagula, mixed with red serum; the lining membrane, and still more so that of the auricle and the auriculo-ventricular valves, of a deep violet colour, smooth and without opacity. The same colour at left, but much less marked, as also in the pulmonary artery, and the aorta, at their origin. All the valves supple.

Abdomen.—The *stomach* contained two ounces of bright yellow semi-fluid matter. Venous arborescence in the great cul-de-sac; no other injection. The mucous membrane was mamelonated along the great curvature, everywhere thinned and softened, except near the pylorus, where it was of good consistence and natural thickness. No ulceration. The mucous membrane of the *duodenum* was a little softened, but otherwise natural; the glands of Brunner much developed, especially near the orifice of the stomach. The *small intestine* contained a considerable quantity of orange coloured matter throughout its whole extent. The mucous membrane was more or less of the same colour until after it had been frequently washed. when it offered its usual pale appearance; its thickness and consistence natural, except near the ileo-cæcal valve, where it was a little softened, but pale; Peyer's glands perfectly natural. The *large intestine* contained a quantity of chocolate coloured fæces. Its walls were very thick, chiefly owing to the thickening of the muscular and sub-mucous coats. Mucous membrane studded with an immense number of ulcerations, varying in size from that of a small pea to that of a bean, rounded or oval, in some limited to the mucous coat, in others extending to the muscular. These ulcerations were more numerous and larger, as we approached the termination of the rectum, but extended throughout the whole tract of the intestine. The intervening mucous membrane was opaque, not varying decidedly from its natural colour, except by a slight admixture of slate colour, with here and there a spot of light brown; its consistence was diminished, especially in the rectum, where it also presented a granulated appearance, and was perhaps a little thinned; elsewhere its thickness was about natural. The *liver* was not remarkable in size; very flabby; its surface of a dull lead colour, except about the left lobe, where a portion of it was of the usual reddish brown hue; its colour internally bronzed with a reddish shade, the surface of a section shining, rather mottled by the unequal development of the two substances, which are not distinguishable, however, by any very distinct shades of colouring; its consistence softer than natural. The gall bladder small, containing about an ounce of fluid and moderately viscid bile, of a colour between olive and orange. The spleen enlarged, about six by four inches, very soft, pulpy, of a brownish black colour. The mesenteric glands healthy. The kidneys flabby, their cortical substance pale, but otherwise natural.

As before remarked, we were unable to obtain any satisfactory account of

the disease previous to admission. The patient was evidently labouring under dysentery, but this was not sufficient to explain all her symptoms. The circumstances under which she had been attacked, the yellowness of the skin, and perhaps something in the general aspect of the patient, were calculated to lead to the suspicion that, combined with dysentery, she was labouring under a protracted form of remittent. No distinct exacerbations of fever, however, are noted, if we except that on the morning of the sixth, when the pulse was more active than previously, and the skin hot, a circumstance, to say the least, more in accordance with the supposition of remittent, than of simple dysentery, at so late a period of the disease. Whatever doubt might have existed during life, was, however, removed by the examination after death; for, besides the thickening, ulceration, &c., of the large intestine, the mucous coat of the stomach was inflamed; the liver and spleen presented the same alterations as in the other cases of remittent, whilst the evidences of any other disease were absent. The inflammation of the large intestine, and the consequent debilitating discharges, were undoubtedly among the principal causes of death.

Mesenteric glands.—We have neglected to note their condition in three of the seven cases. In the remaining four they were healthy or without evident enlargement.

The *kidneys* were sometimes flabby, but, so far as examined, presented no lesion of importance.

In one case where it had been necessary to draw off the urine frequently by a catheter, and, where the bladder was considerably distended, its muscular coat was greatly developed.

As regards the external appearance of the bodies there is little to be said. Yellowness of the skin is mentioned in only one case, though undoubtedly it existed also in the three others where it was present during life. In one case the skin is described as pale. Emaciation was not remarkable in any except the two cases where the disease was protracted. Indeed, in one of the others the muscles are noted as being dark red, firm and fully developed, the fat abundant and firm; in another, the muscles the same, and the subcutaneous fat a quarter of an inch thick. Rigidity was marked in every case where this circumstance is alluded to.

Let us now observe, in conclusion, that, of the various lesions described in the foregoing pages, two only were constant or observed in every case, viz. that of the spleen and the peculiar alteration of the liver. We might perhaps include among the constant lesions, the development of the glands of Brunner in the duodenum, but it may admit of doubt whether these glands were really morbidly enlarged in every case, although, at the same time, their frequent enlargement and uniform distinctness constitute a striking peculiarity of the disease. Of those which were not constant, the inflammation of the stomach is unquestionably most worthy of attention, both on account of its great frequency and the importance of the organ itself. The

lesion of the spleen, though constant, was similar in appearance to that found in other diseases. It was remarkable, however, for the uniformly great degree to which it was carried, and for being frequently accompanied during life with pain on pressure in the left hypochondrium, a circumstance not usually accompanying enlargement and softening of the organ in other acute affections. The liver, on the other hand, was the seat of a morbid change, not only present in every case, but of a character not met with in other diseases, and as it was the only lesion which offered these two conditions, the conclusion is obvious that it constituted the essential anatomical characteristic of the disease, as it presented itself to our observation. As the number of cases were small, such a conclusion when viewed as a general proposition, applicable to remittent fever universally, can only be regarded as the indication of a probable truth, the full confirmation of which requires the analysis of a more extended series of observations, conducted after the same manner. I have already given my reasons for supposing that the lesion in question will probably be found to be uniformly characteristic of the disease, and also for believing that even if such should not be found to be the case, it still had strong claims upon our attention, and shall not repeat them here. It is a circumstance particularly worthy of note that the only two fevers in which yellowness of the skin is found as a principal symptom, should also be the only ones characterised by any remarkable alteration of the liver, and this consideration is certainly calculated to give to the latter additional interest and importance. I ought perhaps here to mention that I was made acquainted with the conclusions of M. Louis in reference to the anatomical characteristic of the yellow fever of Gibraltar, some years before the publication of his work on that subject, as he kindly favoured me with a perusal of the manuscript, which he placed in my hands for that purpose shortly before my leaving Paris in the year 1834. To this circumstance I am no doubt much indebted for having my attention especially directed to the condition of the liver, particularly as the very first fatal case which occurred at the Pennsylvania Hospital, after my entrance upon the duties of my station, bore a strong resemblance in many of its symptoms to yellow fever. Admitting that the lesion of the liver, which I have described, really constitutes the essential anatomical characteristic of remittent fever, are we to look to this organ as the primary seat of the disease? To this, I think, we must answer in the negative, at least so far as our information at present extends, because, in the first place, we have no evidence that the lesion is present at the very commencement of the disease, although it is highly probable that it exists at a very early stage, and, in the second, it is impossible, even if it were so, to explain by its means all the early symptoms, or, in other words, to trace them to it as to their source. In short, it seems to me, that here, as well as in typhoid and yellow fever, the characteristic anatomical lesions are to be regarded, like the pustules of small pox, as consequences and not as causes of the affections which they severally characterize, and

that we must look for the latter in some morbid condition other than what is observed in the solid organs. It is to be hoped that the investigations now going on in reference to the alterations of the blood may throw some light upon this obscure subject.

Of the causes of death but little need be said. In some cases the condition of the organs afforded a sufficient explanation of it, especially in those two, where, in addition to the lesions generally met with, there was either extensive ulceration of the large intestine, or thinning and softening of the mucous membrane of the small intestine with partial peritonitis. In others again, the lesions of the solid viscera do not appear to be sufficient, but, as the blood was altered in every case in which its condition was noted, we may reasonably conclude that the changes in this fluid played an important part in bringing about the fatal termination.

The symptoms, &c., will form the subject of a future communication.

ART. II. *Statistics of Fractures and Dislocations Treated in the Pennsylvania Hospital, during the ten years, from 1830 to 1839 inclusive.*

By GEORGE W. NORRIS, M. D., one of the Surgeons to the Institution.

IN the whole range of surgical subjects, there are none of greater practical importance than those of fractures and luxations; none that require more constant care and attention for their proper treatment, and none consequently that should more frequently be urged upon the notice of the practitioner and student. During the ten years which have just elapsed, a large number of these accidents have been treated at the Pennsylvania Hospital, and without having any novelties regarding their treatment to make known, we have thought that it might not be uninteresting to the readers of the reports from this hospital to have presented to them the results obtained there during a term of years, in these important classes of injuries. As has ever been the case, surgeons are still divided in opinion as to the best method of treating fractures of the extremities. Volume after volume has been written to show the propriety of one or another mode of treatment, but in few instances only has an appeal to a large number of facts been made to justify the recommendations that have been given of them. To public institutions it is that we must principally look for statistical information in regard to these injuries, and, although our records on this subject are so imperfect as to permit us to give only general results, still we look upon them as of some interest, and have prefaced them with a concise account of the plan of treatment which has been generally adopted in these accidents, during the time mentioned.